

What is claimed is:

1. In an induction heating coil including a bobbin formed of a heat-resistant material and a conductor wound round said bobbin, a particular conductor is wound round each of a plurality of bobbins having different diameters and assembled in a telescopic manner.
2. The induction heating coil as claimed in claim 1, wherein the conductor wound round an outer bobbin larger in diameter than an inner bobbin is a main coil to be mainly used.
3. The induction heating coil as claimed in claim 2, wherein each conductor is received in a spiral groove formed in an outer periphery of a particular respective bobbin.
4. The induction heating coil as claimed in claim 1, wherein each conductor is wound over a width corresponding to either one of a main and an auxiliary sheet passing range.
5. The induction heating coil as claimed in claim 4, wherein each conductor is received in a spiral groove formed in an outer periphery of a particular bobbin.
6. The induction heating coil as claimed in claim 1, wherein each conductor is received in a spiral groove formed in an outer periphery of a particular bobbin.
7. An induction heating type fixing device for fixing

a toner image on a recording medium, said induction heating type device comprises:

two rollers for conveying the recording medium while nipping said recording medium; and

an induction heating coil associated with at least one of said two rollers for generating an induction magnetic flux;

wherein said induction heating coil comprises:

a plurality of bobbins formed of a heat-resistant material and each having a particular diameter, said plurality of bobbins being assembled in a telescopic manner; and

a plurality of conductors each being wound round one of said plurality of bobbins.

8. The fixing device as claimed in claim 7, wherein the conductor wound round an outer bobbin larger in diameter than an inner bobbin is a main coil to be mainly used.

9. The fixing device as claimed in claim 7, wherein each conductor is wound over a width corresponding to either one of a main and an auxiliary sheet passing range.

10. The fixing device as claimed in claim 7, wherein each conductor is received in a spiral groove formed in an outer periphery of a particular bobbin.

11. In an image forming apparatus including an

induction heating type fixing device for fixing a toner image on a recording medium, said induction heating type fixing device comprises:

two rollers for conveying the recording medium while nipping said recording medium; and

an induction heating coil associated with at least one of said two rollers for generating an induction magnetic flux;

wherein said induction heating coil comprises:

a plurality of bobbins formed of a heat-resistant material and each having a particular diameter, said plurality of bobbins being assembled in a telescopic manner; and

a plurality of conductors each being wound round one of said plurality of bobbins.

12. The apparatus as claimed in claim 11, wherein the conductor wound round an outer bobbin larger in diameter than an inner bobbin is a main coil to be mainly used.

13. The apparatus as claimed in claim 11, wherein each conductor is wound over a width corresponding to either one of a main and an auxiliary sheet passing range.

14. The apparatus as claimed in claim 11, wherein each conductor is received in a spiral groove formed in an outer periphery of a particular bobbin.

15. In an induction heating coil for an induction heating type fixing device, leads of a plurality of coils are laid inside of said plurality of coils.

16. The induction heating coil as claimed in claim 15, wherein said coils are wound round a bobbin formed of a nonconductive material, said leads being laid inside of said bobbin.

17. The induction heating coil as claimed in claim 16, wherein holes are formed in said bobbin for leading said leads into said bobbin.

18. The induction heating coil as claimed in claim 15, wherein said coils are wound round a bobbin formed of a nonconductive material, and

grooves are formed in an outer periphery of said bobbin for laying said leads inside of said coils.

19. In an induction heating coil for an induction heating type fixing device that includes a heat roller, a plurality of coils are wound round said heat roller, and

at least one of said plurality of coils is connected to another coil over an immediately adjoining coil by a connection lead.

20. The induction heating coil as claimed in claim 19, wherein said connection lead includes removable connecting means for connecting said connection lead to another connection lead.

21. In an induction heating coil for an induction heating fixing device that includes a heat roller, a plurality of coils are wound round said heat roller, and said plurality of coils each have leads at least one of which comprises a flat lead.

22. The induction heating coil as claimed in claim 21, wherein said flat lead connects a coil associated therewith to another coil or a coil drive circuit over an immediately adjoining coil.

23. The induction heating coil as claimed in claim 22, wherein said flat lead comprises a thin, flat sheet formed of a conductive material.

24. The induction heating coil as claimed in claim 22, wherein said flat lead comprises a litz wire.

25. The induction heating coil as claimed in claim 24, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

26. The induction heating coil as claimed in claim 25, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

27. The induction heating coil as claimed in claim 26, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which

a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said heat roller other than said main range.

28. The induction heating coil as claimed in claim 27, wherein said main coil is positioned at a center, and

    said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

29. The induction heating coil as claimed in claim 27, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

30. The induction heating coil as claimed in claim 27, wherein opposite ends of said main coil are coincident with or positioned slightly outward of opposite ends of said main range of said heat roller.

31. The induction heating coil as claimed in claim 21, wherein said flat lead comprises a litz wire.

32. The induction heating coil as claimed in claim 31, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

33. The induction heating coil as claimed in claim

32, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

34. The induction heating coil as claimed in claim 33, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said heat roller other than said main range.

35. The induction heating coil as claimed in claim 34, wherein said main coil is positioned at a center, and

    said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

36. The induction heating coil as claimed in claim 34, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

37. The induction heating coil as claimed in claim 34, wherein opposite ends of said main coil are coincident with or positioned slightly outside of opposite ends of

said main range of said heat roller.

38. The induction heating coil as claimed in claim 21, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

39. The induction heating coil as claimed in claim 38, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

40. The induction heating coil as claimed in claim 39, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

41. The induction heating coil as claimed in claim 40, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said heat roller other than said main range.

42. The induction heating coil as claimed in claim 41, wherein said main coil is positioned at a center, and

    said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

43. The induction heating coil as claimed in claim

41, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

44. The induction heating coil as claimed in claim 41, wherein opposite ends of said main coil are coincident with or positioned slightly outward of opposite ends of said main range of said heat roller.

45. The induction heating coil as claimed in claim 21, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

46. The induction heating coil as claimed in claim 45, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

47. The induction heating coil as claimed in claim 46, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said heat roller other than said main range.

48. The induction heating coil as claimed in claim 47, wherein said main coil is positioned at a center, and said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

49. The induction heating coil as claimed in claim 47, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

50. The induction heating coil as claimed in claim 47, wherein opposite ends of said main coil are coincident with or positioned slightly outward of opposite ends of said main range of said heat roller.

51. The induction heating coil as claimed in claim 21, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

52. The induction heating coil as claimed in claim 51, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position

substantially corresponding to an auxiliary range of said heat roller other than said main range.

53. The induction heating coil as claimed in claim 52, wherein said main coil is positioned at a center, and said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

54. The induction heating coil as claimed in claim 52, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

55. The induction heating coil as claimed in claim 52, wherein opposite ends of said main coil are coincident with or positioned slightly outward of opposite ends of said main range of said heat roller.

56. The induction heating coil as claimed in claim 21, wherein said coils comprise a main coil and an auxiliary coil,

    said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said

heat roller other than said main range.

57. The induction heating coil as claimed in claim 56, wherein said main coil is positioned at a center, and said auxiliary coil comprises two auxiliary coils respectively located at opposite sides of said main coil.

58. The induction heating coil as claimed in claim 56, wherein said main coil extends from one end of said heat roller to an intermediate portion of said heat roller, and

    said auxiliary coil extends from the other end of said main coil to the other end of said heat roller.

59. The induction heating coil as claimed in claim 56, wherein opposite ends of said main coil are coincident with or positioned slightly outward of opposite ends of said main range of said heat roller.

60. In an image forming apparatus including a fixing device that fixes a toner image on a recording medium with a heat roller and an induction heating coil, a plurality of coils are wound round said heat roller, and

    said plurality of coils each have leads at least one of which comprises a flat lead.

61. The apparatus as claimed in claim 60, wherein said flat lead connects a coil associated therewith to another coil or a coil drive circuit over an immediately adjoining coil.

62. The apparatus as claimed in claim 60, wherein said flat lead comprises a thin, flat sheet formed of a conductive material.

63. The apparatus as claimed in claim 60, wherein said flat lead comprises a litz wire.

64. The apparatus as claimed in claim 60, wherein said lead has a sectional area equal to or greater than a cross-sectional area of the litz wire.

65. The apparatus as claimed in claim 60, wherein said flat lead has a thickness equal to or smaller than a diameter of the litz wire.

66. The apparatus as claimed in claim 60, wherein said coils comprise a main coil and an auxiliary coil, said main coil is located at a position substantially corresponding to a main range of said heat roller which a recording medium having a preselected size smaller than a maximum available size passes, and

said auxiliary coil is located at a position substantially corresponding to an auxiliary range of said heat roller other than said main range.

67. In an induction heating type fixing device, an induction heating coil comprises a bobbin for supporting conductors, said bobbin comprising a plurality of bobbin members removably connected to each other.

68. The fixing device as claimed in claim 67, wherein

said bobbin is hollow and cylindrical, and

the conductors are wound on inner peripheries of said bobbin members.

69. The fixing device as claimed in claim 68, wherein the conductors are selectively wound on the inner peripheries of said bobbin members or on outer peripheries of said bobbin members.

70. In an induction heating coil for an induction heating type fixing device, a bobbin for supporting conductors comprises a plurality of bobbin members removably connected to each other, and

the conductors each are wound round a particular bobbin member.

71. The fixing device as claimed in claim 70, wherein said bobbin is hollow and cylindrical, and

the conductors are wound on inner peripheries of said bobbin members.

72. The fixing device as claimed in claim 71, wherein the conductors are selectively wound on the inner peripheries of said bobbin members or on outer peripheries of said bobbin members.

73. In a method of producing an induction heating coil for an induction heating type fixing device and including a bobbin for supporting conductors, said bobbin comprises a plurality of bobbin members removably

connected to each other, after a particular conductor has been wound on each bobbin member, said plurality of bobbin members are assembled.

74. The method as claimed in claim 73, wherein said bobbin is hollow and cylindrical, and

the conductors are wound on inner peripheries of said bobbin members.

75. The method as claimed in claim 74, wherein the conductors are selectively wound on the inner peripheries of said bobbin members or on outer peripheries of said bobbin members.

76. In an image forming apparatus including a fixing device for fixing a toner image on a recording medium with a heat roller, which includes an induction heating coil, said induction heating coil comprises a bobbin for supporting conductors, and

said bobbin comprises a plurality of bobbin members removably connected to each other.

77. The apparatus as claimed in claim 76, wherein said bobbin members comprise a main bobbin member round which a conductor for serving as a main coil is wound and an auxiliary bobbin member round which a conductor for serving as an auxiliary coil is wound,

said main bobbin member is located at a position substantially corresponding to a main range of the heat

roller which a recording medium having a preselected size smaller than a maximum available size passes, and

    said auxiliary bobbin member is located at a position substantially corresponding to an auxiliary range of the heat roller other than said main range.

78. The apparatus as claimed in claim 76, wherein said bobbin is hollow and cylindrical, and

    the conductors are wound on inner peripheries of said bobbin members.

79. The apparatus as claimed in claim 76, wherein the conductors are selectively wound on the inner peripheries of said bobbin members or on outer peripheries of said bobbin members.